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US EPA RECORDS CENTER REGION 5



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Sub: Titanium Metals

CERCLIS:

Job: 030-0035106

Site Longitude: 80-36-28 80.607780
Site Latitude : 40-26-49 40.446949

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. CENTRACTS may have up to ten radii of any length. 1000 block groups, and 15000 block group sides.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from the Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, P.O. Box 495, Essex, Conn. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the pro-

ducts obtained by multiplying each X-coordinate by the difference between the adjacent Y-coordinates. For a polygon with coordinates at adjacent angles A, B, C, D, and E. The formula can be expressed:

$$\text{Area} = 1/2(Xa(Ye-Yb) + Xb(Ya-Yb) + Xc(Yb-Yd) + Xd(Yc-Ye) + Xe(Yd-Ya))$$

For each ring, the selected Block Groups will be inside, outside, or intersected by the ring. When a polygon is intersected, the partial Block Group area within that ring is calculated using the method described below.

When a ring intersects a Block Group, the intersect points are solved and plotted at the points where the ring enters and exits the shape. The chord line, a line within the circle connecting the intersect points is determined. This chord line is used to calculate the segment area, the half moon shape between the chord line and the ring, and the sub-polygon created by the chord line and the Block Group boundaries that lie outside the ring.

The segment area is subtracted from the sub-polygon area to determine the area of the sub-polygon outside the ring. The area outside the ring is then subtracted from the area of the entire polygon to arrive at the inside area. This inside area is then divided by the tract's total area to determine the percentage of area within the ring. This process is repeated for each block group that is intersected by one of the rings. The total area, partial area, and percentage of partial area of those block groups within, or partially within a ring, are held in memory for the report.

On occasion, the algorithm described above is unable to determine the area of the partial area. Within the report program is a "Paint" routine which allows an enclosed shape to be highlighted. Another routine calculates the percentage of highlighted screen pixels to the pixels within the polygon. A manual entry is allowed. Both the "paint" method and manual entry method override the calculated method.

CENTRACTS lists, starting on page 4, all Block Groups in State, County, Census Tract, and Block Group ID order that lie within, or partially within, the maximum ring. Each Block Group is identified by a City or Town name and by the Block Group's State, County, Tract and Block Group ID number. Following is the Block Group's 1990 population and house count extracted from the Census Bureau's 1990 STF-1A files.

The next four columns display water source data from the 1990 STF-3A files. The first column is "Units with Public system or private company source of water", followed by "Units with individual well, Drilled, source of water"; "Units with individual well, Dug, source of water" and "Units with Other source of water".

For each ring, CENTRACTS then shows the Block Groups that are within that ring, the Block Group's total area in square miles, the partial area of the Block Group within that ring, and the partial percentage within the ring. The areas of the included Block Group and the partial areas are then totaled.

The last section tallies the demographic data within each ring. The percentage of area for each Block Group is multiplied times the census data for that Block Group and totaled for all Block Group's within the ring. Ring totals are then determined by subtracting the three mile data from the four mile, the two mile from the three mile, one from the two, etc... Population on private wells is calculated using the formula: $((\text{Drilled} + \text{Dug Wells}) / \text{Households}) * \text{Population}$

Titanium Metals

No.	City	Block Group ID	Blk Grp People	House Holds	Public Water	Drilled Wells	Dug Wells	Other
1	Knox	39081 0112	1 798	346	354	0	0	0
2	Knox	39081 0112	2 1045	460	443	0	0	0
3	Knox	39081 0112	3 720	362	353	0	0	0
4	Island Creek	39081 0113	1 1192	495	453	0	0	0
5	Island Creek	39081 0113	2 940	414	432	0	0	0
6	Island Creek	39081 0113	3 945	421	452	0	0	0
7	Island Creek	39081 0114	1 1442	540	223	26	270	37
8	Island Creek	39081 0114	2 1163	477	369	3	109	0
9	Island Creek	39081 0114	3 1297	477	399	18	51	0
10	Island Creek	39081 0114	4 1231	470	383	0	64	0
11	Island Creek	39081 0114	5 1395	487	406	0	67	9
12	Island Creek	39081 0114	6 918	392	340	0	42	0
13	Island Creek	39081 0114	7 1133	425	394	24	43	0
==	=====	=====	=====	=====	=====	=====	=====	
	Totals:		14219	5766	5001	71	646	46

Titanium Metals

City	Census Tract ID		Tract People	House Count	Public Water	Drilled Wells	Dug Wells	Other Wells
Island Creek	39081 0114	1	1442	540	223	26	270	37
Island Creek	39081 0114	2	1163	477	369	3	109	0
Island Creek	39081 0114	3	1297	477	399	18	51	0
Island Creek	39081 0113	1	1192	495	453	0	0	0
Island Creek	39081 0113	2	940	414	432	0	0	0
Island Creek	39081 0113	3	945	421	452	0	0	0
Island Creek	39081 0114	7	1133	425	394	24	43	0
Island Creek	39081 0114	5	1395	487	406	0	67	9
Island Creek	39081 0114	6	918	392	340	0	42	0
Island Creek	39081 0114	4	1231	470	383	0	64	0
Sub Totals:			11656	4598	3851	71	646	46
Knox	39081 0112	2	1045	460	443	0	0	0
Knox	39081 0112	3	720	362	353	0	0	0
Knox	39081 0112	1	798	346	354	0	0	0
Sub Totals:			2563	1168	1150	0	0	0

Titanium Metals

For Radius of 4 Mi., Circle Area = 50.265482

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Knox	39081 1121	0.269600	0.269600	100.00
2	Knox	39081 1122	0.224726	0.224726	100.00
3	Knox	39081 1123	0.142566	0.142566	100.00
4	Island Creek	39081 1131	0.209564	0.209564	100.00
5	Island Creek	39081 1132	0.292156	0.292156	100.00
6	Island Creek	39081 1133	0.182536	0.182536	100.00
7	Island Creek	39081 1141	22.466326	0.679762	3.03
8	Island Creek	39081 1142	6.507185	3.300950	50.73
9	Island Creek	39081 1143	5.764212	5.074215	88.03
10	Island Creek	39081 1147	3.368916	0.998635	29.64
11	Island Creek	39081 1145	5.397878	4.908597	90.94
12	Island Creek	39081 1146	4.795821	4.583818	95.58
13	Island Creek	39081 1144	3.673631	3.673631	100.00
Totals:			53.295116	24.540756	

For Radius of 3 Mi., Circle Area = 28.274334

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Knox	39081 1121	0.269600	0.269600	100.00
2	Knox	39081 1122	0.224726	0.224726	100.00
3	Knox	39081 1123	0.142566	0.142566	100.00
4	Island Creek	39081 1131	0.209564	0.209564	100.00
5	Island Creek	39081 1132	0.292156	0.292156	100.00
6	Island Creek	39081 1133	0.182536	0.182536	100.00
8	Island Creek	39081 1142	6.507185	1.061489	16.31
9	Island Creek	39081 1143	5.764212	4.057494	70.39
11	Island Creek	39081 1145	5.397878	2.032421	37.65
12	Island Creek	39081 1146	4.795821	2.633161	54.91
13	Island Creek	39081 1144	3.673631	3.673631	100.00
Totals:			27.459873	14.779345	

For Radius of 2 Mi., Circle Area = 12.566371

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
1	Knox	39081 1121	0.269600	0.155404	57.64
2	Knox	39081 1122	0.224726	0.128579	57.22
3	Knox	39081 1123	0.142566	0.142566	100.00
4	Island Creek	39081 1131	0.209564	0.209564	100.00
5	Island Creek	39081 1132	0.292156	0.292156	100.00
6	Island Creek	39081 1133	0.182536	0.182536	100.00
9	Island Creek	39081 1143	5.764212	2.155192	37.39
11	Island Creek	39081 1145	5.397878	0.661910	12.26
12	Island Creek	39081 1146	4.795821	0.533188	11.12

Titanium Metals

13 Island Creek	39081 1144	3.673631	2.343000	63.78
=====	=====	=====	=====	=====
Totals:		20.952690	6.804094	

For Radius of 1 Mi., Circle Area = 3.141593

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
-----	-----	-----	-----	-----	-----
4	Island Creek	39081 1131	0.209564	0.169583	80.92
5	Island Creek	39081 1132	0.292156	0.228752	78.30
6	Island Creek	39081 1133	0.182536	0.182536	100.00
9	Island Creek	39081 1143	5.764212	0.350052	6.07
13	Island Creek	39081 1144	3.673631	2.210670	60.18
===	=====	=====	=====	=====	=====
	Totals:		10.122099	3.141593	

For Radius of .5 Mi., Circle Area = 0.785398

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
-----	-----	-----	-----	-----	-----
4	Island Creek	39081 1131	0.209564	0.007698	3.67
5	Island Creek	39081 1132	0.292156	0.075194	25.74
6	Island Creek	39081 1133	0.182536	0.129786	71.10
13	Island Creek	39081 1144	3.673631	0.572719	15.59
===	=====	=====	=====	=====	=====
	Totals:		4.357887	0.785398	

For Radius of .25 Mi., Circle Area = 0.196350

No.	City	Block Group ID	Total Area	Partial Area	% Within Radius
-----	-----	-----	-----	-----	-----
5	Island Creek	39081 1132	0.292156	0.027171	9.30
6	Island Creek	39081 1133	0.182536	0.010512	5.76
13	Island Creek	39081 1144	3.673631	0.158666	4.32
===	=====	=====	=====	=====	=====
	Totals:		4.148323	0.196350	

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Site Data
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Population:	11128.16
Households:	4589.72
Drilled Wells:	25.27
Dug Wells:	286.17
Other Water Sources:	9.30

=====
Partial (RING) data
=====

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population:	2125.19
Households:	809.55
Drilled Wells:	12.11
Dug Wells:	120.21
Other Wells:	5.92

** Population On Private Wells: 347.35

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population:	2604.90
Households:	1044.13
Drilled Wells:	6.43
Dug Wells:	93.20
Other Wells:	2.29

** Population On Private Wells: 248.54

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population:	2932.94
Households:	1278.53
Drilled Wells:	5.64
Dug Wells:	31.16
Other Wells:	1.10

** Population On Private Wells: 84.42

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population:	2315.58
Households:	960.16
Drilled Wells:	1.09
Dug Wells:	31.63
Other Wells:	0.00

** Population On Private Wells: 78.92

---- Within Ring: .5 Mile(s) and .25 Mile(s) ----

Population:	954.54
Households:	414.30
Drilled Wells:	0.00
Dug Wells:	7.21
Other Wells:	0.00

** Population On Private Wells: 16.62

---- Within Ring: .25 Mile(s) and 0 Mile(s) ----

Population:	195.01
Households:	83.05
Drilled Wells:	0.00
Dug Wells:	2.76
Other Wells:	0.00

** Population On Private Wells: 6.49

** Total Population On Private Wells: 782.34
February 22, 1995